Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

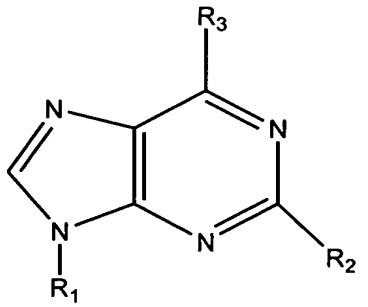
Listing of Claims:

Claims 1 - 10 (cancelled)

11. (New) A method for treating an individual suffering from multiple sclerosis (MS) comprising administrating to said individual an A3 adenosine receptor agonist (A3RAg).

12. (New) The method of Claim 11 wherein said A3RAg is orally administered.

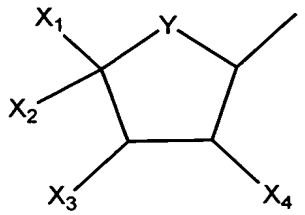
13. (New) The method of Claim 11 wherein said A3RAg is a compound within the scope of the general formula (I):



(I)

wherein,

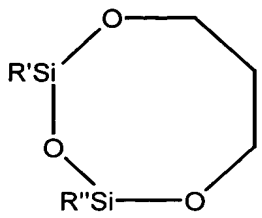
- R_1 represents an alkyl, hydroxyalkyl, carboxyalkyl or cyanoalkyl or a group of the following general formula (II):



(II)

in which:

- **Y** represents an oxygen, sulfur or CH_2;
- $\mathbf{X_1}$ represents H, alkyl, $R^aR^bNC(=O)-$ or HOR^c-, wherein
  - $\mathbf{R^a}$ and $\mathbf{R^b}$ may be the same or different and are selected from the group consisting of hydrogen, alkyl, amino, haloalkyl, aminoalkyl, BOC-aminoalkyl, and cycloalkyl or are joined together to form a heterocyclic ring containing two to five carbon atoms; and
  - $\mathbf{R^c}$ is selected from the group consisting of alkyl, amino, haloalkyl, aminoalkyl, BOC-aminoalkyl, and cycloalkyl;
- $\mathbf{X_2}$ is H, hydroxyl, alkylamino, alkylamido or hydroxyalkyl;
- $\mathbf{X_3}$ and $\mathbf{X_4}$ represent independently hydrogen, hydroxyl, amino, amido, azido, halo, alkyl, alkoxy, carboxy, nitrilo, nitro, trifluoro, aryl, alkaryl, thio, thioester, thioether, -OCOPh, -OC(=S)OPh or both $\mathbf{X_3}$ and $\mathbf{X_4}$ are oxygens connected to >C=S to form a 5-membered ring, or $\mathbf{X_2}$ and $\mathbf{X_3}$ form the ring of formula (III):



(III)

where **R'** and **R''** represent independently an alkyl group;

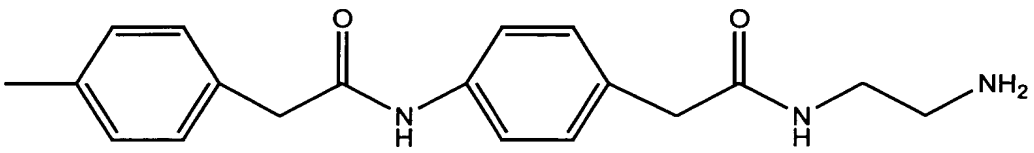
- $\mathbf{R_2}$ is selected from the group consisting of hydrogen, halo, alkylether, amino, hydrazido, alkylamino, alkoxy, thioalkoxy, pyridylthio, alkenyl; alkynyl, thio, and alkylthio; and

- $\mathbf{R_3}$ is a group of the formula $-NR_4R_5$, wherein

- $\mathbf{R_4}$ is a hydrogen atom or a group selected from alkyl, substituted alkyl or aryl-NH-C(Z)-, with **Z** being O, S, or NR^a with $\mathbf{R^a}$ having the above meanings;

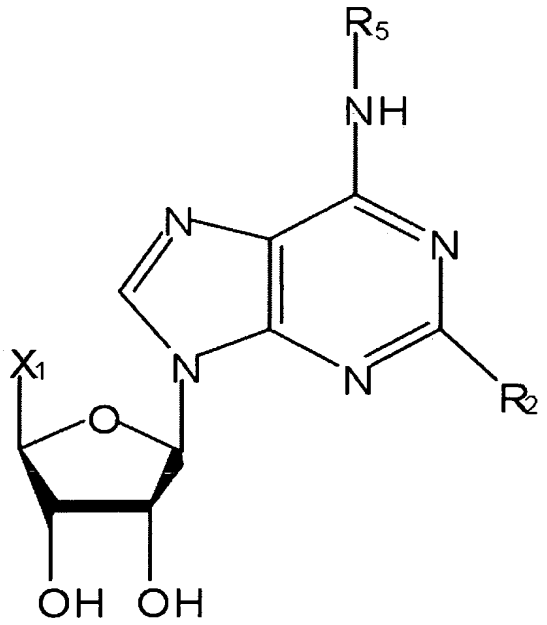
wherein when $\mathbf{R_4}$ is hydrogen then

- $\mathbf{R_5}$ is selected from the group consisting of R- and S-1-phenylethyl, benzyl, phenylethyl or anilide groups unsubstituted or substituted in one or more positions with a substituent selected from the group consisting of alkyl, amino, halo, haloalkyl, nitro, hydroxyl, acetoamido, alkoxy, and sulfonic acid or a salt thereof; benzodioxanemethyl, fururyl, L-propylalanyl- aminobenzyl, β-alanylamino- benzyl, T-BOC-β-alanylaminobenzyl, phenylamino, carbamoyl, phenoxy or cycloalkyl; or $\mathbf{R_5}$ is a group of the following formula:



or when R_4 is an alkyl or aryl-NH-C(Z)-, then, R_5 is selected from the group consisting of heteroaryl-NR^a-C(Z)-, heteroaryl-C(Z)-, alkaryl-NR^a-C(Z)-, alkaryl-C(Z)-, aryl-NR-C(Z)- and aryl-C(Z)-, **Z** representing an oxygen, sulfor or amine; or a physiologically acceptable salt of the above compound.

14. (New) The method of claim 11 wherein said A3RAg is a nucleoside derivative of the general formula (IV):



(IV)

wherein,

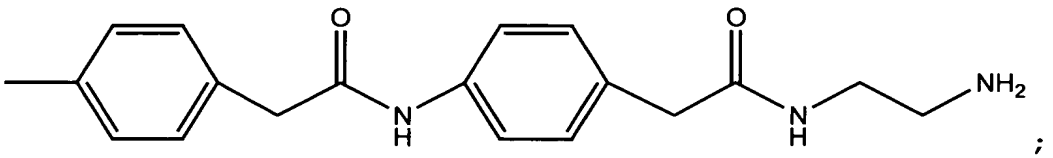
- X_1 represents H, alkyl, $R^aR^bNC(=O)$- or HOR^c-, wherein
  - R^a and R^b may be the same or different and are selected from the group consisting of hydrogen, alkyl, amino, haloalkyl, aminoalkyl, BOC-aminoalkyl,

and cycloalkyl or are joined together to form a heterocyclic ring containing two to five carbon atoms; and

- R^c is selected from the group consisting of alkyl, amino, haloalkyl, aminoalkyl, BOC-aminoalkyl, and cycloalkyl;

- R_2 is selected from the group consisting of hydrogen, halo, alkylether, amino, hydrazido, alkylamino, alkoxy, thioalkoxy, pyridylthio, alkenyl; alkynyl, thio, and alkylthio; and

- R_5 is selected from the group consisting of R- and S-1-phenylethyl, benzyl, phenylethyl or anilide groups unsubstituted or substituted in one or more positions with a substituent selected from the group consisting of alkyl, amino, halo, haloalkyl, nitro, hydroxyl, acetoamido, alkoxy, and sulfonic acid or a salt thereof; benzodioxanemethyl, fururyl, L-propylalanyl- aminobenzyl, β-alanylamino- benzyl, T-BOC-β-alanylaminobenzyl, phenylamino, carbamoyl, phenoxy or cycloalkyl; or R_5 is a group of the following formula:



;

and physiologically acceptable salts of said nucleoside derivative.

15. (New) The method of Claim 11 wherein said A3RAg is selected from N^6-2- (4-aminophenyl)ethyladenosine (APNEA), N^6-(4-amino-3-iodobenzyl) adenosine- 5'-(N-methyluronamide) (AB-MECA), N^6-(3-iodobenzyl)-adenosine-5'-N- methyluronamide (IB-MECA) and 2-chloro-N^6-(3-iodobenzyl)- adenosine-5'-N-methyluronamide (Cl-IB-MECA).